The *Cypraea martini* of SCHEPMAN, 1907

(Mollusca: Gastropoda)

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(Plate 15; 4 Text figures; 1 Map)

Our knowledge of some of the rarer cowries is limited, and identification is made difficult by the lack of photographs to complement the original descriptions of many of these species. The recent discovery of a freshly dead *ex pisce* specimen of *Cypraea* (*Notadusta*) *martini* SCHEPMAN, 1907 (see Plate 15, figs. 2a and 2b) has caused me to search for other records of this rare species; it is the purpose of this paper to collate all the available information, to publish what may be the first field report of a recently collected specimen, and to provide photographs of it and other comparable shells.

Relatively little has been known about *Cypraea martini*. It has been represented by only ten recorded specimens, eight of which, from the Pleistocene of northwest Celebes, were preserved in the museums at Leiden and Amsterdam. Only two Recent specimens have been recorded, one from the New Hebrides in the Schilder Collection (see Plate 15, figs. 4a and 4b) and one in the Shuttleworth Collection in the museum at Bern, Switzerland, with the locality label "Philippines." This latter specimen was misidentified as *Cypraea beckii* GASKOIN, 1836, but has been definitely substantiated as *C. martini* by Dr. F. A. Schilder, who has examined it several times.

This, then, was the status of *Cypraea martini* when I received a specimen for identification: no examples were known outside of Europe; most were fossil shells; the type figure was in a foreign journal (SCHEPMAN, 1907) not readily available to most collectors of *Cypraea,* and the only other illustration known to me was that of ALLAN, 1956, which is a rather exaggerated drawing that does not provide an adequate guide for identification.

The specimen on which my study is based (see Plate 15, figs. 2a and 2b) was collected during a phase of the Palawan Expedition in April 1962 that centered in the area of the Monpog sea passage off southern Luzon — more precisely, in the vicinity of Pulo Island, northeast of the large island of Marinduque and west of Luzon's Bondoc Peninsula (see map). In from one to five fathoms of water in this area, where the substrate varied from rock to coral, spearfishermen collected a specimen of fish known only as a member of the Grouper genus *Plectropmus* (family Serranidae). Subsequent examination of the stomach contents revealed a small brown cowrie of unknown identity. No other similar specimens were collected during the trip, nor is it known in any of the Philippine collections. Mr. Fernando G. Dayrit sent it to me for identification, and has furnished the information relating to its discovery.

There is another exceedingly rare cowrie, *Cypraea fultoni* SOWERBY, 1903, an *ex pisce* form whose predator fish, known to me simply as a Musselcracker, is a migratory species seen only for a short time each year off the coast of South Africa. Since it is not known where the Musselcracker travels during the remainder of the year, it is impossible to ascertain an exact locality where *C. fultoni* lives. With this analogy in mind, I inquired into the living habits of the Grouper family. Mr. John E. Fitch, Research Director of the California Department of Fish and Game, informed me that his department has studied the behavior of certain species of Grouper, applying marking tags and checking the movements of those particular species; the results of the study showed that these fish normally live within a general area of no more than a square mile, not moving about as do the Musselcrackers of South Africa. The non-migratory characteristic seems to be typical of all the species of Grouper studied; therefore it can probably be assumed to be true in this instance also. The supposed habits of the fish from whose stomach the *C. martini* was taken would seem to establish the Pulo Island vicinity as a reasonably reliable locality record for this mollusk; further, the small size of this shell (approximately 15 mm in length) suggests the possibility that if the mollusk had been ingested more than a few hours (and, consequently, some miles away) before the fish was caught, normal digestive

processes would have caused it to be eliminated. The relatively larger size of *C. fultoni* (approximately 65 mm in length) could conceivably prevent its passage out of the fish's stomach and into the intestine. These possibilities all lend credence to the heretofore questioned Philippine locality for the Bern specimen of *C. martini*.

Additional *Cypraea* species collected in the Pulo Island area, living in shallow water, were *C. contaminata* Sowerby, 1832; *C. punctata* Linnaeus, 1771; *C. gracilis* Gaskoin, 1848; *C. cribraria* Linnaeus, 1758; *C. caurica* Linnaeus, 1758; *C. asellus* Linnaeus, 1758; there were other common species taken at the same time, also. This community of species might suggest to future collectors other localities where *C. martini* could conceivably be found.

Of the eight recorded fossil specimens from the Celebes Pleistocene, five (including the holotype) were deposited in the Rijksmuseum van Geologie en Mineralogie at Leiden, and three in the Zoological Museum at Amsterdam.

All were originally collected by R. Fennema, but the latter three specimens had been in Schepman's private collection.

Over a period of many years, Dr. Schilder has several times visited the three museums possessing specimens of *Cypraea martini*, and has made notes in his personal records concerning the appearance of those specimens, measurements of most of them, and in some instances, sketches of part or all of a particular shell (see text figures 1, 2, and 4). He has generously sent to me not only photographs of his specimen of *C. m. superstes* (see Plate 15, figs. 4a and 4b), but also all the data in his possession

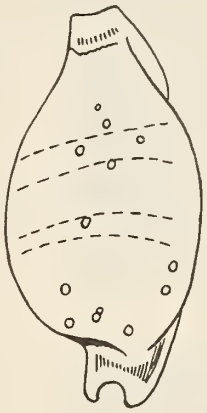

Figure 1: Copy of a drawing of *Cypraea martini martini* (Paratype 4) by F. A. Schilder

pertaining to any of the known examples, and drawings of the identifying characters of certain of the specimens at Amsterdam and Leiden; these are reproduced here in text figure 2. Dr. Schilder particularly points out that one of the Amsterdam paratypes has a greater than normally thickened right side, with a conspicuously bent-up margin in the middle (see text fig. 4). The statistics he has furnished are summarized at the end of this paper (see Table 1). He has expressly given me his permission

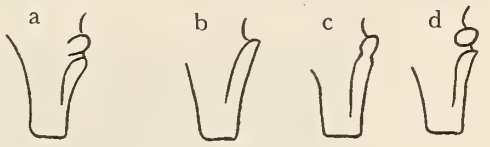

Figure 2: Rough sketches of the terminal ridge of
a - Holotype b - Paratype 5
c - Paratype 6 d - Paratype 7
Sketches by F. A. Schilder

to use any of these data or to quote from his letters to me; some of his remarks have been incorporated in my text.

The genus *Notadusta* Schilder, 1935 was established for *Cypraea victoriana* Schilder, 1935, a Tertiary form from southern Australia. *Notadusta* at present includes two living species, *N. martini* (Schepman, 1907) and *N. katsuae* (Kuroda, 1960).

Cypraea martini comprises two races in the Indo-Pacific: *C. martini martini* Schepman, 1907 from the Celebes

Pleistocene (Pl. 15, figs. 1a, 1b) and with one Recent specimen reportedly from the Philippines (Bern specimen; Pl. 15, figs. 3a, 3b), and *C. martini superstes* SCHILDER, 1930 from the New Hebrides islands (Pl. 15, figs. 4a, 4b). *Cypraea martini superstes* differs from *C. m. martini* by having a more inflated shell with more numerous labial teeth. Upon first viewing the specimen at Bern in 1932, SCHILDER considered it a second example of *C. m. superstes,* but after further deliberation (1938, 1941, 1952) referred it back to *C. m. martini* "because of the slighter density of the teeth on the outer lip."

Because SCHEPMAN's description of the species is based on a fossil example and many important descriptive characters of a live-collected shell have necessarily been omitted by him, it seems advisable to include them here.

Figure 3: Terminal ridge approximation of *Cypraea martini martini* (Hypotype 2)

The purpose of this emendation is to clarify the record and to facilitate identification of other specimens that may later be discovered.

The shell is elliptically ovate; the narrow aperture, long for the shell, widens constrictedly to the front from the medial area, curving gently left adapically; the terminal ridge is sharp, perpendicular, angling only perceptibly (see text fig. 3); shell is umbilicate, apex hardly visible, adapical columellar extension obscures one-third of umbilicus; both front and rear terminal collars well defined, extended into beaks, the posterior curving upward to the left. The labial teeth are short, well developed, comparatively far apart; the columellar teeth are much finer, longer, closer together, though becoming noticeably shorter centrally as well as posteriorly. The adaxial surface of the columella is smooth, the last third posteriorly becoming ribbed just before merging into the fossula. The ribbed fossula is fairly deeply concave, flattening adapically into a long, depressed columella; the last eight axial teeth reappear as strong, well defined knobs on the adaxial margin of the fossula. The dorsal inductura is smooth, glossy, somewhat opaquely thin (possibly because of the stomach fluids of the fish), light brown, with an occasional vague brown spot; there is a dark brown blotch on either side of both terminal extensions; the lateral margins, beaks, base, and interstices are a lighter café-au-lait color; there are five widely separated large brown spots irregularly spaced the length of the right margin, with smaller and more numerous spots on the left side; four broad brown bands, the first one exceedingly faint, originate in the toothed area of the base, fading into the upper left side of the shell. The teeth (27 columellar, 22 labial) and terminal ridge are dark brown, the labial teeth extending well into the aperture; the median axial teeth terminating abruptly at the outer margin of the fossula; eight tooth-like knobs on the inner edge are white.

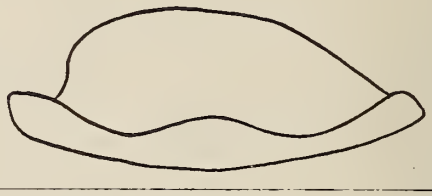

Figure 4: Rough sketch showing the high callused flare of the right margin of Paratype 6. Sketch by F. A. Schilder

Because of its unusual flanged appearance, the right margin needs special mention. Being comparatively thick and strong, it flattens out almost at a right angle, forming an extension of the outer lip which serves to strengthen the front beak; the dorsal curving slope thus forming a quasi-sutural effect at the juncture with the flange that is a very distinctive feature of this species. The right margin is very broad at both ends, with a flattened upward curve in the center.

I have enjoyed the opportunity of working with this unusual species. Since only one shell was collected and because of the equivocal manner in which it was taken, it is impossible at this time to determine its exact ecological

Explanation of Plate 15

Dorsal and ventral aspects of *Cypraea* (*Notadusta*) *martini martini* SCHEPMAN, 1907, and *Cypraea* (*Notadusta*) *martini superstes* SCHILDER, 1930.

Figure 1a, 1b: Holotype of *Cypraea martini martini* (photograph © Rijksmuseum van Geologie en Mineralogie, Leiden

Figure 2a, 2b: Hypotype No. 2 of *Cypraea martini martini* (photo by Takeo Susuki)

Figure 3a, 3b: Hypotype No. 1 of *Cypraea martini martini* (photo © Naturhistorisches Museum, Bern)

Figure 4a, 4b: Holotype of *Cypraea martini superstes* (photo © Dr. F. A. Schilder, Halle (Saale), German Democratic Republic)

Figure 1 a

Figure 2 a

Figure 3 a

Figure 1 b

Figure 2 b

Figure 3 b

Figure 4 a

Figure 4 b